



WAFER LEVEL CAPPED SENSOR

FIELD OF THE INVENTION

5 The invention generally relates to sensors and, more particularly, the invention relates to sensors having wafer level caps.

BACKGROUND OF THE INVENTION

10 Modern micromachining techniques have enabled designers to produce highly functional sensors in a minimum of space. For example, accelerometers have been widely produced as MEMS (microelectromechanical systems) to detect both positive and negative accelerations of an underlying system. One type of MEMS accelerometer converts the movement of a suspended mass into
15 acceleration data.

To that end, the suspended mass typically has a plurality of movable fingers inter-digitated with a plurality of stationary fingers (on an underlying die) to form a variable capacitance. When subjected to an acceleration, the mass moves in an expected manner, thus changing the variable capacitance formed by
20 the fingers. Detection circuitry detects this capacitance change and, consequently, converts it to a voltage or current signal that is proportional to the acceleration. Alternatively, the capacitance can be converted to a binary digital voltage or current signal that encodes the acceleration. Once determined, the acceleration data may be forwarded to another device, such as a computer, to
25 perform some underlying function (e.g., deploy air bags).

The detection circuitry used to calculate acceleration can be either external or internal to the sensor. When external, the overall system has a number of problems. Among others, the interface between the sensor and interconnect circuitry (to the detection circuitry) can create a parasitic capacitance that can

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